National Institute of Environmental Health Sciences

Influence of climate warming on tickborne encephalitis expansion to higher altitudes over the last decade (1997-2006) in the Highland Region (Czech Republic)

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Abstract:

The steep rise in the incidence of tick-borne encephalitis (TBE) in the 1990s and its subsequent high level in the Czech Republic are not even over the whole territory. It is manifested markedly in the Czech-Moravian Highland region. In the decades of 1971 through 1992, TBE incidence in the Highland Region did not reach the countrywide average. The rise has been noted only since 1997; in the year 2006 TBE incidence in that administrative region was more than double the countrywide average. Analysis of the situation have not found any socio-economic shifts or land-use changes, or in the numbers of game animals, that could have had an effect on TBE incidence. The rise of infections in localities 500 m above sea level (a.s.l.) and more was markedly steeper than that below that altitudinal limit. At those altitudes there has been found an increase in average monthly temperatures exceeding countrywide averages namely in the period of maximum Ixodes ricinus activity (May-August). Detailed analysis of meteorological conditions and comparison with a long-term study of the influence of modifications of the mountain climate in the Krkonose Mts. on I. ricinus tick distribution and the pathogens transmitted by them, have led to the conclusion that likewise in the Czech-Moravian Highland a marked warming had influenced the local population of the vector I. ricinus, caused an activation of foci of TBE, increased contacts of humans with the vector, consequently giving rise to an apparent increase in the incidence of human cases of TBE.

Source: http://apps.szu.cz/svi/cejph/archiv/2008-1-02-full.pdf

Resource Description

Exposure :

weather or climate related pathway by which climate change affects health

Precipitation, Temperature

Temperature: Fluctuations

Geographic Feature:

resource focuses on specific type of geography

None or Unspecified

Geographic Location:

resource focuses on specific location

Non-United States

Non-United States: Europe

European Region/Country: European Country

Other European Country : Czech Republic

Health Impact: ☑

specification of health effect or disease related to climate change exposure

Infectious Disease

Infectious Disease: Vectorborne Disease

Vectorborne Disease: Tick-borne Disease

Tick-borne Disease: Tick-borne Encephalitis

Resource Type: ☑

format or standard characteristic of resource

Research Article

Timescale: ☑

time period studied

Time Scale Unspecified